

FIGURE 3

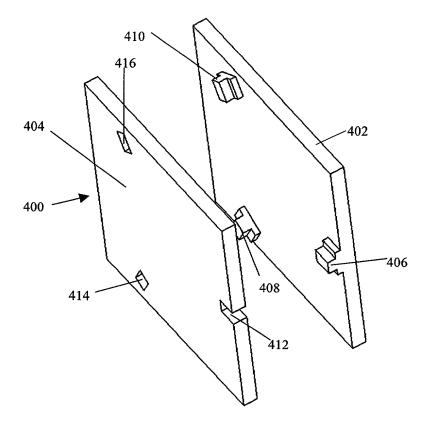


FIGURE 4

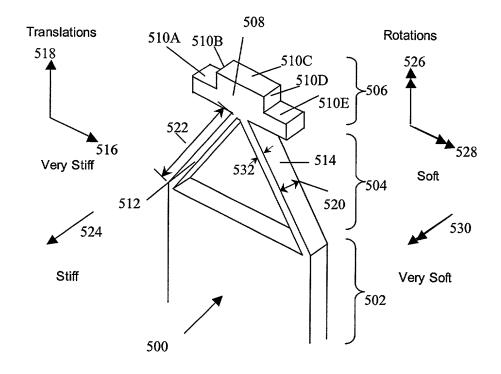


FIGURE 5

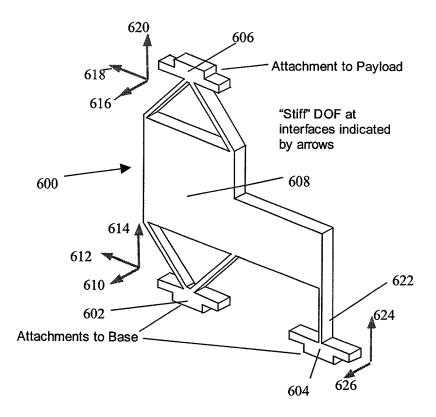


FIGURE 6

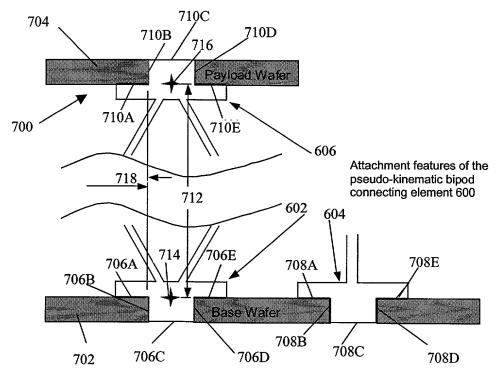


FIGURE 7

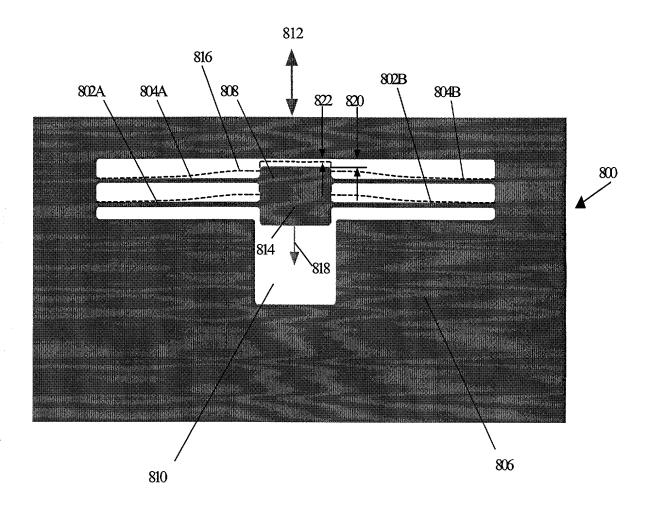


FIGURE 8

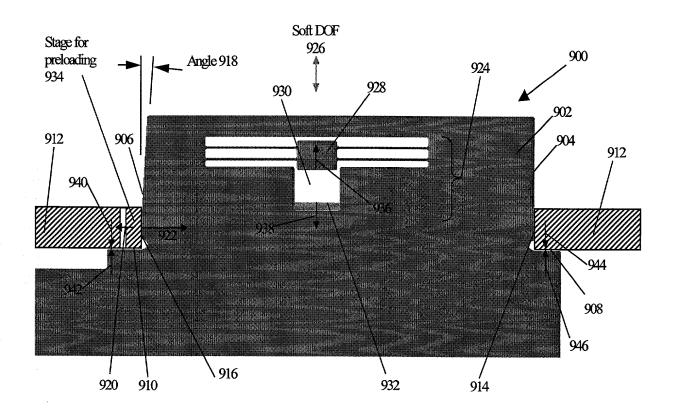


FIGURE 9

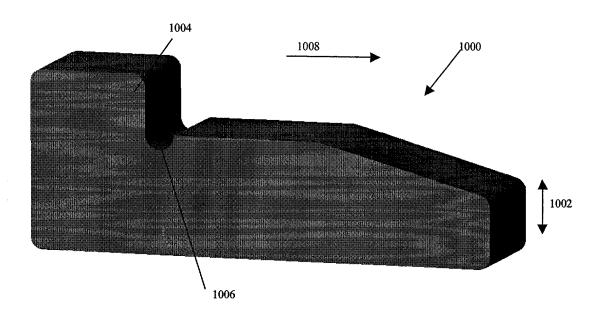


FIGURE 10

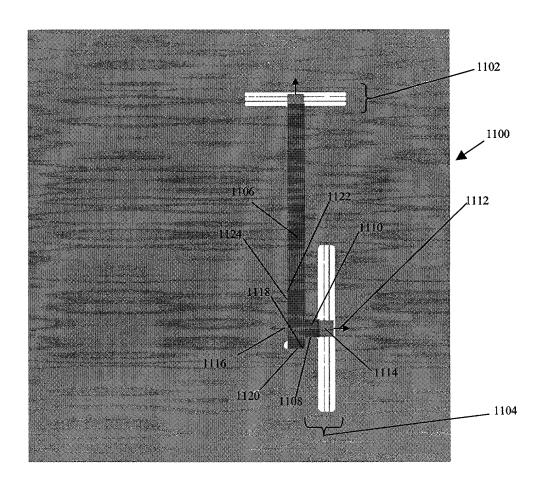


FIGURE 11

Base, Payload, and Connecting Structure and Methods of Making the Same CALVET ET AL. DOCKET NO. M-12486 US

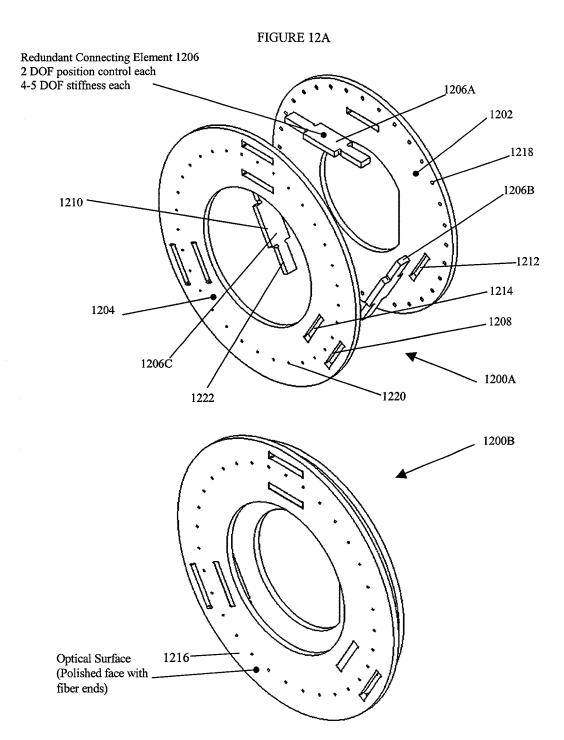
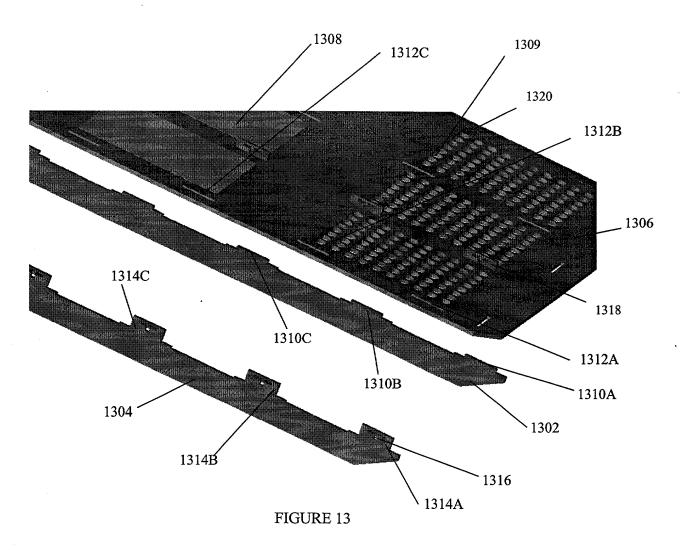


FIGURE 12B



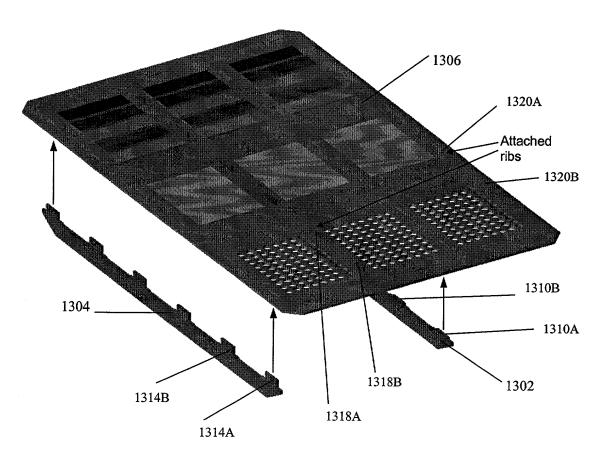


FIGURE 14

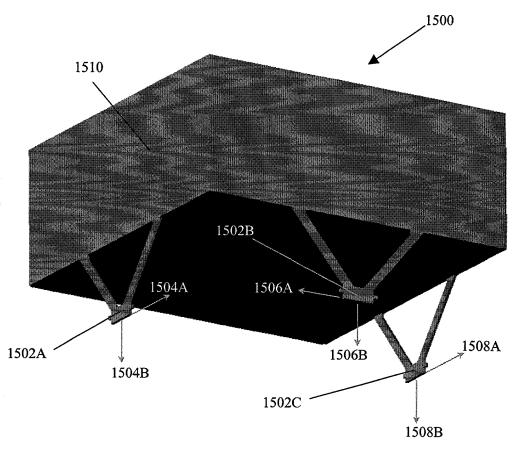


FIGURE 15

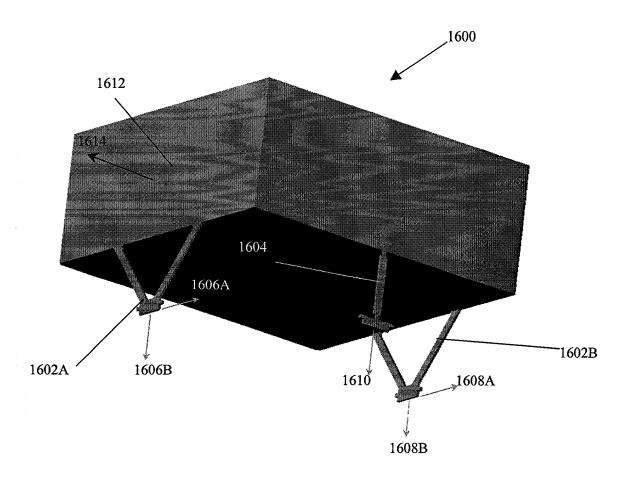


FIGURE 16

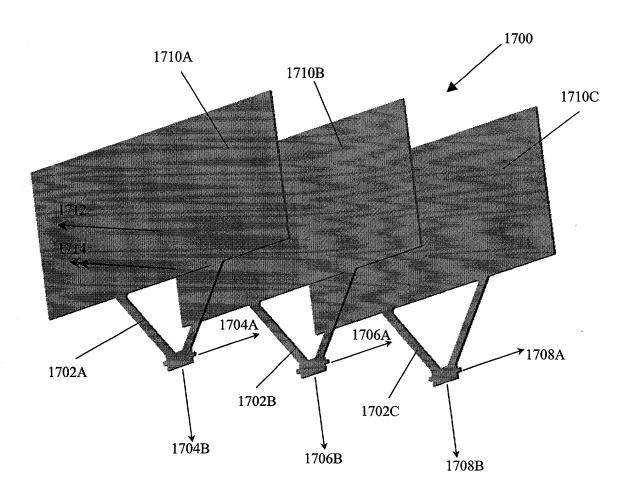


FIGURE 17

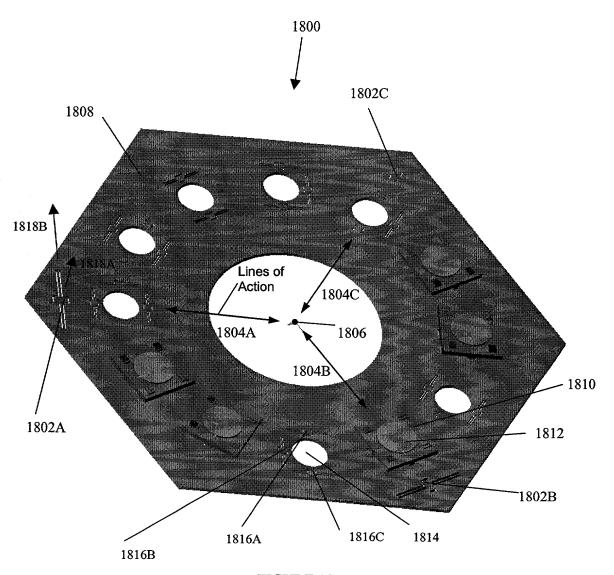


FIGURE 18

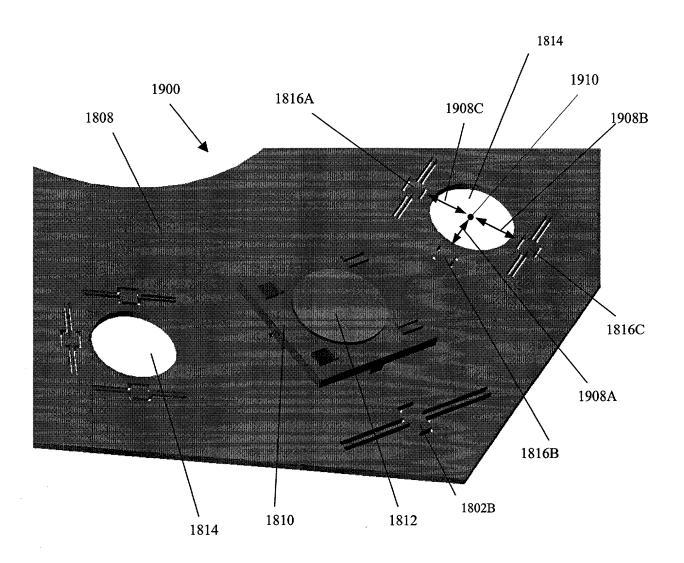


FIGURE 19

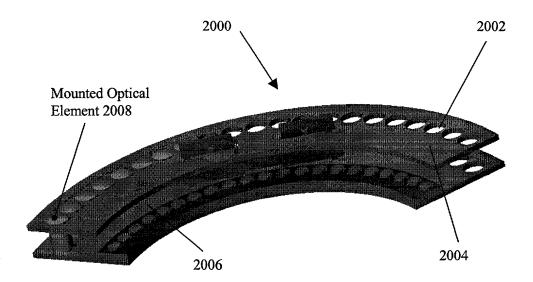
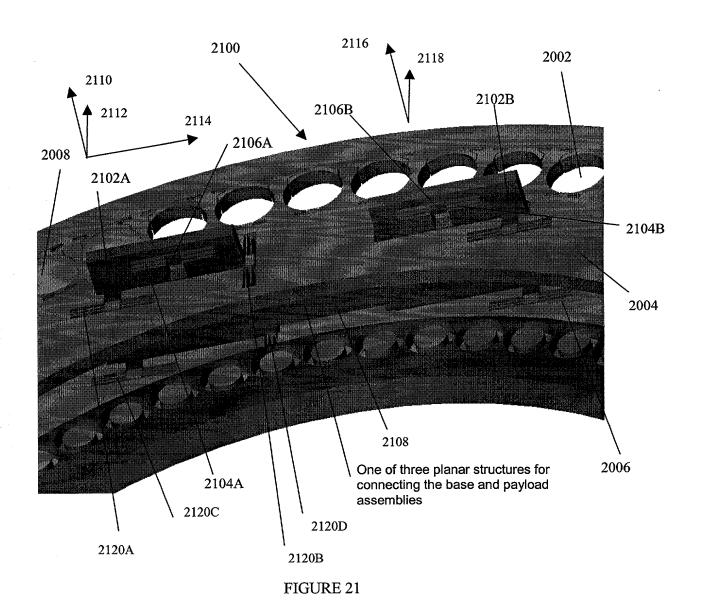


FIGURE 20



842610 v1

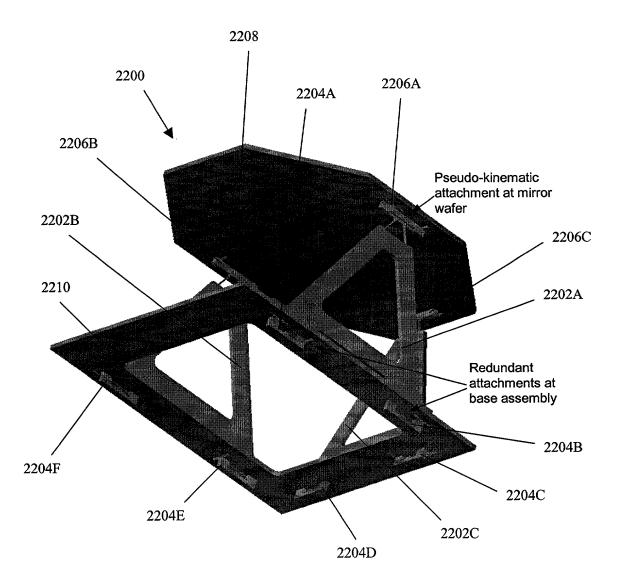


FIGURE 22

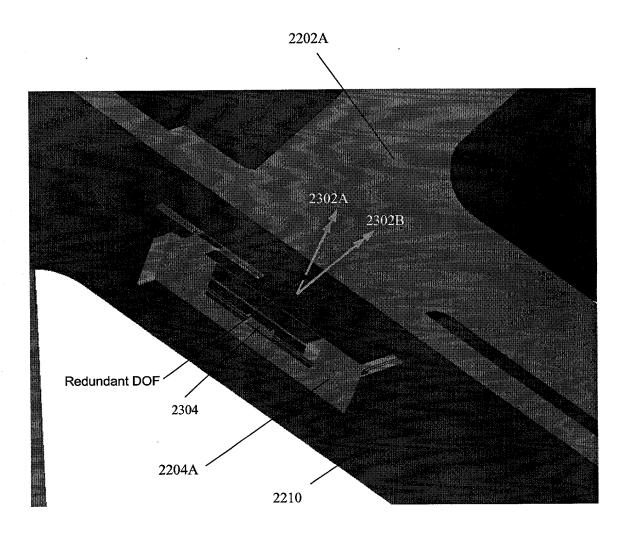


FIGURE 23

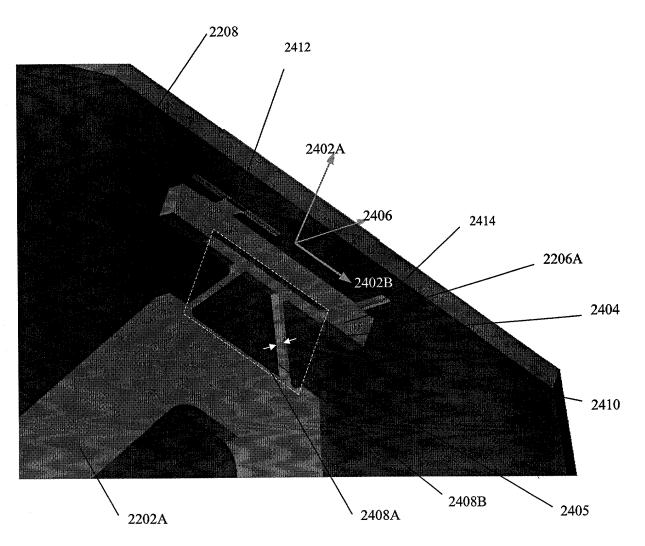


FIGURE 24

Base, Payload, and Connecting Structure and Methods of Making the Same CALVET ET AL. DOCKET NO. M-12486 US

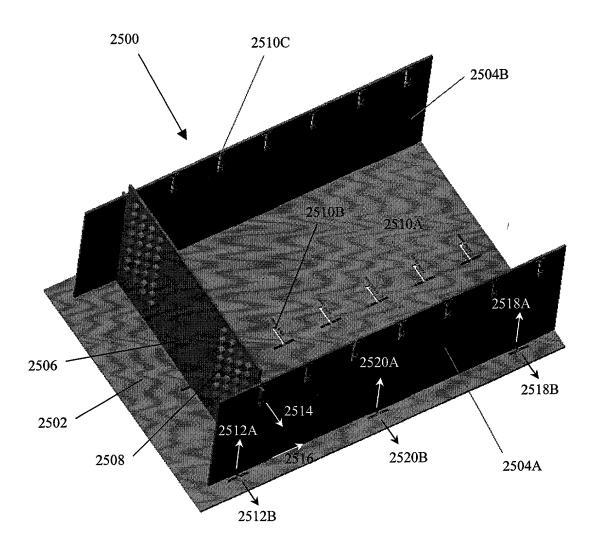


FIGURE 25

Base, Payload, and Connecting Structure and Methods of Making the Same CALVET ET AL. DOCKET NO. M-12486 US

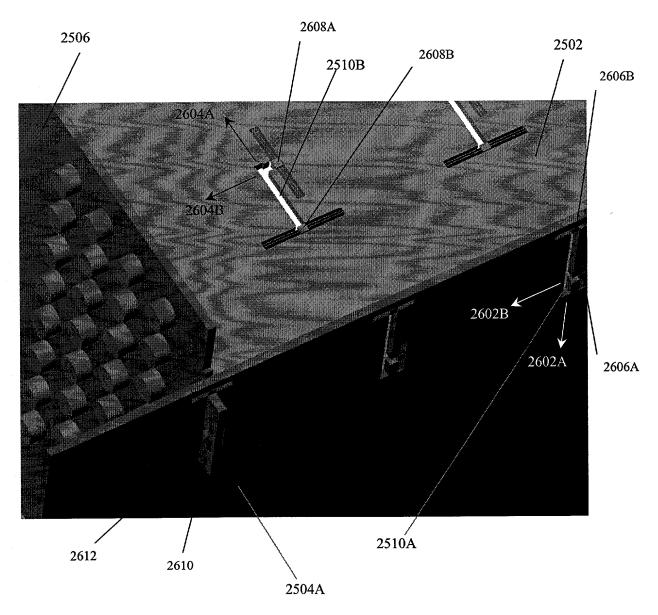


FIGURE 26

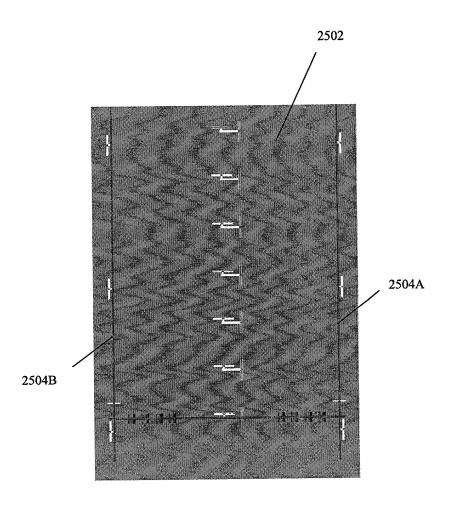


FIGURE 27

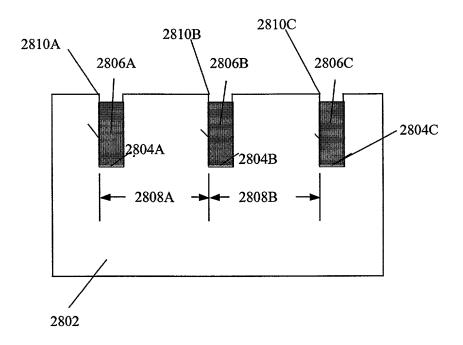


FIGURE 28

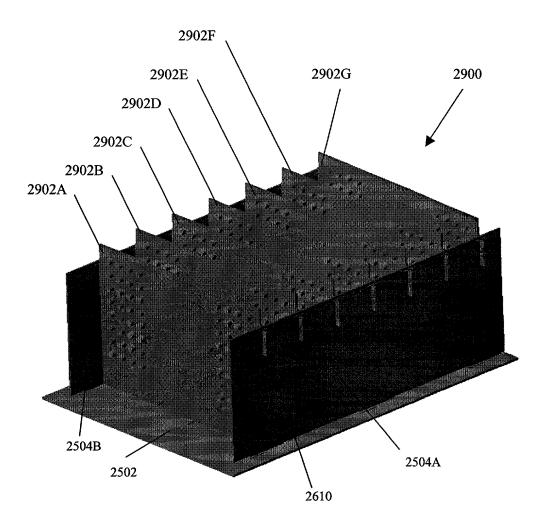
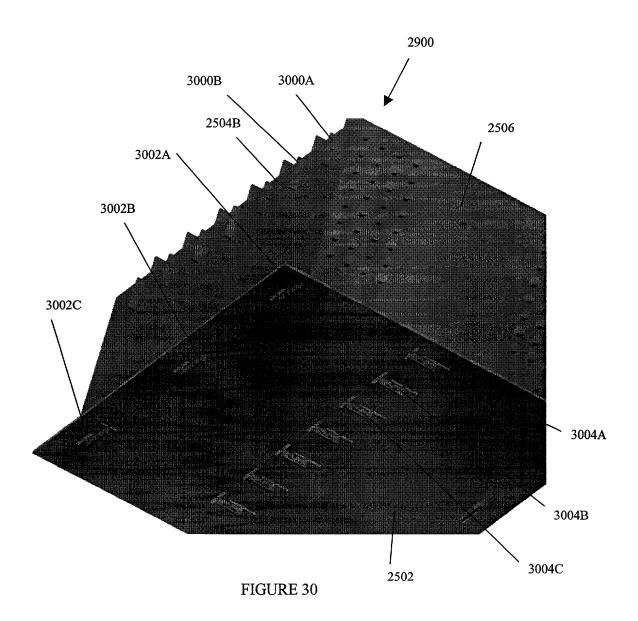


FIGURE 29



Base,Payload and Connecting Structure and Methods of Making the Same Robert J. Calvet; Roman C. Gutierrez; Tony Kai Tang M-12486 US

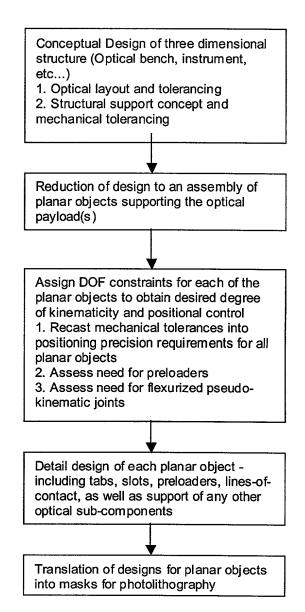


FIGURE 31

Base,Payload and Connecting Structure and Methods of Making the Same Robert J. Calvet; Roman C. Gutierrez; Tony Kai Tang M-12486 US

The process of making parts for 3D precision structures may be flow-charted as follows:

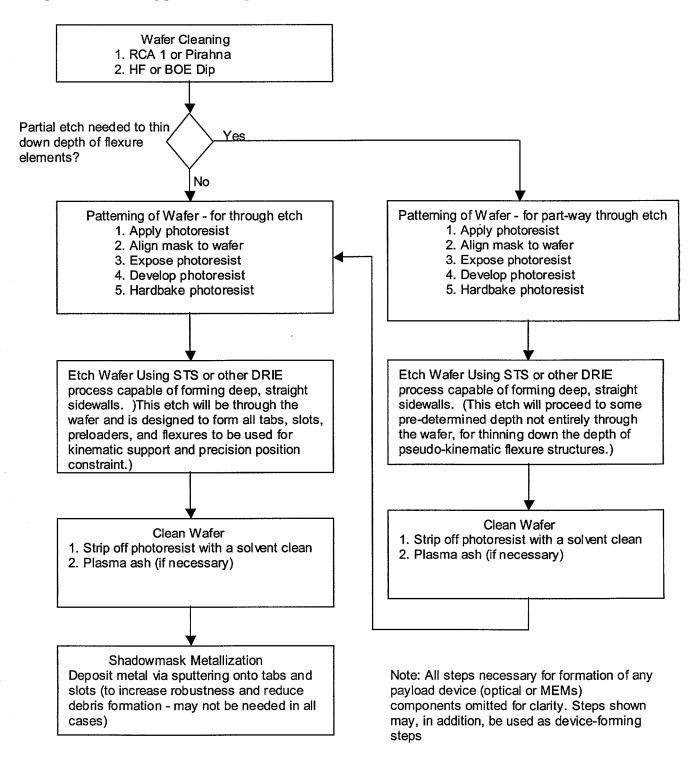


FIGURE 32

Base,Payload and Connecting Structure and Methods of Making the Same Robert J. Calvet; Roman C. Gutierrez; Tony Kai Tang M-12486 US

The process of assembling 3D structures from planar parts is:

Set-up for Assembly

- 1. Assemble any separate optical components to the various planar parts
- 2. Choose a part as the "base" to assemble other planar parts to
- 3. Create jigs and fixtures as needed to aid assembly (should not be necessary these structures should be "self-jigging")

Assemble first planar part to Base

- 1. Engage mating features (tab/slot, edge/surface, surface/surface ...)
- 2. Temporarily support part in any DOF not yet adequately constrained
- 3. Insert any preloader pins desired at this stage

Repeat for all subsequent planar parts

- 1. Engage mating features to base and other parts in order necessary for overall engagement
- 2. Temporary support if necessary
- 3. Insert any preloader pins desired at this stage

Final Assembly

- 1. Insert remainder of preloader pins
- 2. Apply external preloads if necessary (via weights, pneumatics, etc)
- 3. Apply adhesive to joints if deemed necessary
- 4. Cure glue

Note: A bottom-to-top topology is assumed here (as in Figure 1: a base, 3 connecting elements (bipods), and a payload). If the topology is more complex (such as a ring), a more complex assembly procedure is required, possibly also requiring jigs/fixtures.

FIGURE 33